ENVIRONMENTAL ASSESSMENT
Document No.: AK-040-02-EA-022
Case Files: AA-76601, AA-81925

Applicant(s): Temsco Helicopters Inc.
P.O. Box 434
Skagway, Alaska 99840-0434

Alaska Mountain Guides & Climbing School
P.O. Box 1081
Haines, AK. 99827

Type of Action: Special Recreation Permits for Commercial Glacier Landing Tours and Mountain Guiding.

Location: Areas North and West of Skagway, Alaska.

Specifically including:

Upper Chilkat Glacier	T. 26 S., R. 58 E., Secs. 5, 8
Mid-Chilkat Glacier	T.25 S., R. 57 E., Sec. 23
Lower Chilkat Glacier	T. 25 S., R. 57 E., Secs. 9, 10
Upper Ferebee Glacier	T. 26 S., R. 57 E., Sec. 14
Lower Ferebee Glacier	T. 27 S., R. 58 E., Secs. 6, 7, 20, 29
West Creek Glacier	T. 26 S., R. 58 E., Sec. 34
Norse Glacier	T. 25 S., R. 59 E., Secs. 29, 30
Grand Canyon	Glacier T. 26 S., R. 58 E., Sec. 12
Mount Harding	Glacier T. 28 S., R. 59 E., Secs. 19, 20, 29, 32

All land descriptions are within the Copper River Meridian.

Prepared By: Jake Schlapfer, Outdoor Recreation Planner
Melissa Blair, Outdoor Recreation Planner

Preparing Office: Bureau of Land Management
Anchorage Field Office
6881 Abbott Loop Road
Anchorage, Alaska 99507

Date: June 24, 2002

I. INTRODUCTION

A. Purpose and Need for the Proposed Action:

The purpose and need for the Proposed Action is to meet anticipated public demand for quality guided services which provides safe helicopter access to remote or relatively inaccessible locations near Skagway, Alaska. Temsco Helicopters Inc. (Temsco) has been meeting this demand since 1984 and is the only company currently offering glacier landing tours in the Skagway area. This proposed service will meet anticipated public demand for quality guided glacier landing tours in the Skagway area. Temsco also offers the same services under commercial permit with the U.S. Forest Service (USFS) on the Tongass National Forest.

Alaska Mountain Guides (AMG) wishes to offer commercially guided mountaineering adventures on BLM administered lands on the Harding Glacier Southwest of Skagway. They currently offer mountaineering tours and courses ranging from 2-8 days in the Haines area under a BLM Special Recreation Permit. This is the only company/school in the Haines area offering these services. This service meets the anticipated public demand for quality guided services to the mountains and alpine glaciers surrounding Haines.

B. Conformance With Land Use Plan:

No land use plan exists for this area. However, this environmental analysis assesses the impacts of the Proposed Action and provides a basis for a decision on the proposal (43 CFR 1610.8 (b)(1)).

C. Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Analyses:

Applicants must obtain a State of Alaska business license and the aircraft utilized must have the appropriate licenses and certificates from the Federal Aviation Administration (FAA). Permit holders are required to abide by all federal, state, borough or municipal laws, ordinances and regulations which are applicable to the areas or the operations covered in the permit. Any future state, borough or federal permitting requirements that may be developed will automatically become a requirement of any BLM permit.

The BLM does not have jurisdiction to regulate aircraft flight paths, altitudes or noise caused by aircraft overflights or flight seeing operations. BLM may regulate landing locations, number of landings and on-the-ground commercial activities on BLM administered lands. En route flight operations may be indirectly influenced by requiring certain standards to be met as a condition of receiving a permit.

The airport in Skagway is un-towered and under jurisdiction of the FAA. The Flight Standards Division of the FAA is responsible for all flight operations (including safety) in controlled and uncontrolled airspace.

The CFRs for the FAA and the Department of Transportation Volume 14, Chapter 1, Part 135.203 states: "Except when necessary for take-off and landing, no person may operate under visual flight rules (VFR) a helicopter below 300 feet above the surface or less than 300 feet horizontally from any obstacle".

A BLM Special Recreation Permit (SRP) regulates commercial recreation services on BLM administered land and related water pursuant to 43 CFR 8372. As the lands described in the applications are selected by the State of Alaska, a concurrence in accordance with Section 906(k) of the Alaska National Interest Lands Conservation Act (ANILCA) is required.

The Coastal Zone Management Act requires the BLM, when consulting or authorizing activities or undertaking development directly affecting the coastal zone, to insure that the activities or development are consistent with the approved Alaska Coastal Management Program to the maximum extent practical. The activities under the Proposed Action are consistent with the Alaska Coastal Management Program.

Refer to EA-AK-040-95-015, Environmental Assessment for Helicopter Landing Tours in the Skagway and Haines Area, for further information on other required laws and permits pertaining to jurisdiction and regulation of helicopter flight paths, altitudes or noise caused by helicopters (Appendix 1).

II. PROPOSED ACTION AND ALTERNATIVES

A. Actions Common to All Applicants

Flight routes to landing sites from Skagway for Temsco Helicopters and Alaska Mountain Guides will follow established and new recommended flight routes and adhere to local traffic patterns (see attached map). Upon departing Skagway, altitude gains are primarily over Taiya Inlet and mild terrain. Altitude gains to landing site elevations are made prior to flying up drainages or canyons.

In order to monitor goats and other wildlife, a Monitoring Control Area has been established. Wildlife monitoring of helicopter use areas of the upper Lynn Canal has been ongoing for the past seven years. This provides a consistent and updated database for adaptive management changes if needed. The Monitoring Control Area will remain free of commercial helicopter activities.

An Environmental Assessment (EA) on Helicopter Glacier Landing Tours (EA-AK-040-95-015) was completed on May 10, 1995 which analyzed impacts of helicopter use in the Skagway and Haines area. The mitigation measures adopted in that Decision Record are incorporated into the Proposed Action (Appendix 2).

B. Proposed Action:

Temsco Helicopters Inc.

Temsco Helicopters Inc. (Temsco) has been permitted to conduct commercial glacier landing tours on BLM administered lands since 1995. They have requested to continue their operations with minor modifications to landing locations only. All flights would originate and terminate in Skagway, Alaska.

The Temsco operation season is from May 1 to September 30. Temsco estimates 4,700 glacier landings and approximately 18,000 user days during this time period. Since 1995, Temsco Helicopters has been permitted to conduct glacier landing tours on the glaciers listed below. Their permit includes authorization of a specific number of landings on each particular glacier. Temsco Helicopters is requesting authorization to continue operation for the next five years at the 1999 levels. These are as follows:

Glacier Landing Sites	Number of Landings
Chilkat (3)	200
Ferebee (2)	1,100
West Creek	2,800
Norse	400
Grand Canyon	200

With exception for the Norse Glacier, operation hours would be between the hours of 8:00 a.m. and 7:30 p.m. After September 1, authorized operating hours on the Norse Glacier would be between 8:00 a.m. and 6:00 p.m. only.

There are a total of eight landing sites on the Chilkat, Ferebee, West Creek, Norse, and Grand Canyon Glaciers, including two new landing sites on the Chilkat Glacier (see attached map). The number of authorized landings on the Chilkat Glacier would remain at 200 total landings. A landing site on the Upper Ferebee Glacier, authorized in 1995, has been relocated approximately four miles north (see Affected Environment for further discussion). All other landing sites are those previously authorized in 1995 (Appendix 3).

Latitude and longitude coordinates listed below represent the approximate location of the glacier landing sites. Actual landing sites may shift within

one-half mile of the designated GPS coordinates according to glacial movement, safety considerations and the pilot's best judgment.

Glacier Landing Sites	Latitude	Longitude
Upper Chilkat	59º 38' 12"	-135º 34' 47"
Mid-Chilkat	59º 40' 54"	-135º 39' 42"
Lower Chilkat	59º 42' 45"	-135º 42' 54"
Upper Ferebee	59º 36' 51"	-135º 39' 11"
Lower Ferebee	59º 30' 17"	-135º 34' 49"
West Creek	59º 34' 6"	-135º 30' 38"
Norse	59º 40' 24"	-135º 25' 3"
Grand Canyon	59º 37' 54"	-135º 27' 18"

General operation procedures involve three helicopters (American Eurocopter, A-Star 350 B-2 or B-3) taking off at the same time and flying to the glacier. The actual glacier tour involves unloading clients (usually while the helicopter is running), and escorting them to a safety zone while the helicopters depart. A guided 20-30 minute talk/walk about glaciers is conducted and concludes back in the safety zone while the helicopters arrive with new clients and the waiting clients return to Skagway. No permanent or temporary structures or improvements are required. Temsco will take out everything they bring in, including human waste.

Temsco also provides as an option a "Pilot's Choice Tour". This tour involves a one hour flight on the designated flight routes and landing sites depicted on the attached map. All pilot choice landings count towards the allowed number of landings at each site.

Alaska Mountain Guides and Climbing School

Alaska Mountain Guides and Climbing School (AMG) has been permitted to conduct guided mountaineering adventures via fixed wing aircraft on BLM-administered lands since 2000. EA-AK-040-00-005 analyzed the impacts of their operations west of Haines on the Riggs/LeBlondeau, Bertha and Davidson Glacier. AMG proposes expanding their operation to include two to four hour and multi-day mountaineering adventures in the vicinity of Mount Harding Glacier (see attached map). Mountaineering adventures may include alpine hiking, glacier trekking, skiing, ice and rock climbing. Access to these sites is via helicopter and fixed wing aircraft from Skagway, Alaska.

The AMG operation season is from May 1 to September 30. AMG expects to run up to five groups per day for the two to four hour tours. Maximum group size is

twelve clients and two guides. Multi-day climbing courses would vary from one to five days in length. They expect to run up to twenty multi-day trips with a maximum of eight clients and two guides per group. AMG is requesting up to 500 landings which translates into an estimated 3,100 user days per season. Operation hours would be between the hours of 8:00 a.m. and 7:30 p.m.

The Mount Harding Glacier landing site for AMG is at approximately 4,200 feet. Latitude and longitude coordinates listed below represent the approximate location of the glacier landing site. The actual landing site may shift within one-half mile of the designated GPS coordinates according to glacial movement, safety considerations and the pilot's best judgment.

Glacier Landing Site	Latitude	Longitude
Mount Harding	59º 24' 43"	-135º 25' 43"

Alaska Mountain Guides proposes placing a temporary 12' X 16' weather port on the Mount Harding Glacier to serve as a base camp for courses. The weather port would be placed on a plywood and beam floor and used for cooking, emergency gear storage and sleeping purposes. Guides will generally camp on the glacier for three to five days. All solid human waste and trash will be flown out with each return trip to Skagway. The weather port, including flooring, will be flown out at the end of the use season.

C. No Action Alternative:
The No Action Alternative would be to continue present management and not authorize commercial glacier landing tours and mountaineering courses on BLM-administered lands. No action would allow established historical use to continue on Federal lands.

III. AFFECTED ENVIRONMENT

All of the land described in the Proposed Action has been selected by the State of Alaska as part of its entitlement at statehood. BLM is responsible for management of the land until it is conveyed to the State. If the selections are relinquished, BLM will retain management responsibility for the lands.

Helicopter operation areas will include primarily high alpine glacier landing areas. However, early season low altitude landing areas, such as West Creek Glacier, and the lower Chilkat are preferred to access snow-free areas. Flight routes have been adjusted and designed to meet the safety requirements of the aircraft, meet current demand as well as avoid to the greatest extent possible known goat habitat. Landing areas are closely monitored to identify if problems arise and to initiate adaptive management as necessary.

Impacts to wildlife are expected to occur and monitoring will identify trigger points where management change must be implemented to conserve the resource.

Previously authorized landing sites were discussed in EA-AK-040-95-015 (Appendix 3). The addition of new landing sites and associated flight routes results in a net gain of 14 miles of flight corridors. The northernmost flight route which provides access to the Lower and Mid-Chilkat landing sites and the Ferebee Valley below the Ferebee Glacier account for the net gain. Six miles of previously authorized flight corridor are eliminated by the new proposal.

Chilkat Glacier
The Chilkat Glacier was assessed in EA-AK-040-95-015. New landing locations have been requested, Lower and Mid-Chilkat, although the total number of Chilkat Glacier landings remains the same at 200. The Upper Chilkat landing site has been relocated approximately two miles to the southeast to address mountain goat habitat concerns (see attached map). The Lower Chilkat landing site is near the United States and Canadian border and is a preferred early season landing site due to its lower elevation and snow-free condition. The Mid-Chilkat landing site is approximately two miles southeast of the Lower Chilkat landing site. Both of these new landing sites are flanked to the southwest by a very steep mountain ridge which serves as the eastern boundary of the Monitoring Control Area.

Ferebee Glacier
The Upper Ferebee Glacier landing site is an adjustment to the original Upper Ferebee landing location identified in EA-AK-040-95-015 (see attached map). The new Upper Ferebee landing site has been shifted approximately four miles northwest of its original site due to safety considerations and its close proximity to goat habitat.

Harding Glacier
The Harding Glacier landing site requested by AMG is on the south slope of Mount Harding. Mount Harding, southeast of Skagway, lies between Taiya Inlet and the Ferebee River on the Halutu Ridge. The proposed access to the landing site is over Taiya Inlet and entering westward over a gradual east-facing basin to the 4,200 foot glacier (see attached map). The Harding Glacier is flanked to the north by steep, rocky outcrops and to the south and east by hanging ice fields. The west flank of the glacier is the Halutu Ridge. The proposed operation area for AMG is approximately eight air miles southeast of the Monitoring Control Area.

A. Critical Elements:

It has been determined that the following Critical Elements of the human environment are either not present or would not be affected by the Proposed Action or the No Action Alternative:

Areas of Critical Environmental Concern (ACECs)
Cultural/Paleontological Resources
Environmental Justice
Farm Lands (prime or unique)
Flood plains
Invasive, Non-Native Plant Species
Native American Religious Concerns
T&E Species
Wastes (Hazardous/Solid)
Water Quality (Surface/Ground)
Wetlands/Riparian
Wild and Scenic Rivers
Wilderness

1. Air Quality

Helicopters burn a substantial amount of fuel, approximately 40 gallons of jet fuel per hour. This will increase the emissions into the air over the operation area but because the area is so large, the increase in hydrocarbon emissions will not be detectible.

2. ANILCA Section 810 (a), Evaluation and Finding:

These lands are selected by the State of Alaska and therefore do not fall under the definition of Federal Public Lands under ANILCA 102 (3) or under the authority of the Federal Subsistence Board or Subsistence Management Regulations. The taking of fish and game is now under the authority of the State of Alaska Department of Fish and Game (ADF&G). Should the selection for these lands be relinquished, they would fall under the authorities of ANILCA Section 810 (a). Under such a scenario, all subsistence species of land animals would come under the responsibility of the Federal Subsistence Board for subsistence harvest. In times of shortages, the rural local residents would have priority for harvest of fish and game from Federal Public Lands and Waters. Commercial helicopter supported recreation could potentially create such shortages and impact the health of subsistence populations of wildlife. Commercial activities could be terminated or modified to ensure healthy populations for subsistence uses.

B. Wildlife:

Brown bear and black bear dens occur in the proposed operation areas. Females of both species typically select the highest, roughest country after emergence from winter natal dens to protect cubs from being killed by male bears. Bears also utilize goat carrion in avalanche chutes and actively hunt and feed on dispersing goats in the proposed use areas. Brown bear females with cubs and black bear adults have been commonly observed in near proximity or stalking mountain goat groups in late June.

The Chilkat Glacier runs northwest from the main ice field and serves as good habitat for goats, bear, wolverine, and Golden eagles. This ridge to the South/Southwest of the Lower and Mid-Chilkat proposed landing sites provide good goat habitat during the proposed operation season. Both sides of the lower Chilkat drainage provide spring, summer and fall goat habitat.

The relocated Upper Ferebee landing site provides a safe and stable landing area and is specifically located away from preferred goat habitat.

The West facing slopes that drain into the Ferebee glacier is preferred goat nursery habitat May through June. Based on observation data, the east exposure habitats lying south of the Harding Glacier and the south and east facing slopes and ridge lines that are north and east of Mount Harding are occupied by mountain goats during the proposed operation season. Records show that goats have not been observed within a one-mile radius of the Harding Glacier landing site.

Wolverine natal dens are typically located on the specific kind of areas proposed for operation. Wolverine populations are never considered abundant and natal dens are sparsely distributed.

C. Recreation:

During the scoping meetings in 1995 for EA-AK-040-95-015, and at public meetings held in Haines in 2001, concerns were identified by the public regarding the potential impact of aircraft noise on people participating in a variety of recreational activities. They would be impacted through the interruption of their solitude and quiet by the noise from helicopter overflights while they were involved in hunting, fishing, camping, boating, picnicking, and viewing scenery. No issues were identified concerning impacts on recreationists from fixed wing aircraft.

Noise has been identified as an issue for residents of Skagway. In the interest of safety, security and noise, Temsco helicopters has moved their facilities to the southern most point of the community.

The following areas were identified from scoping comments as locations where the impact of noise from helicopters would affect recreationists: the Katzehin River, the Chilkoot Trail and the trail head area near Dyea, the Denver Glacier Trail, and the Laughton Glacier Trail.

The Proposed Action does not include any of these identified recreation areas. There are no known hiking trails to the snow fields and glacial areas listed for the Proposed Action.

D. Socio-Economics:

The town of Skagway has a strong seasonal tourism economy. Retail shops, restaurants, hotels, transportation and tours generate substantial income for the business community and tax revenues. Active tourism businesses support other sectors of the community through spin-off purchases. Most tourists pass through Skagway from May through September when large cruise ships are present. Guiding operations and other tourism based on wildlife and wildlife viewing depend on the long term stability and maintenance of wildlife populations.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts of the Proposed Action:

1. Wildlife:

Wildlife will experience two types of aircraft encounters. The first is from en route flight activity where helicopters are passing by wildlife and their habitats. The second is actual helicopter operations where helicopters are landing and taking off.

En route flight routes could pass by mountain goats, brown bear, black bear, wolves, moose, and raptors engaged in a wide variety of activities, depending on time of year, time of day and location. The short term exposure to noise and visual stimuli from helicopters en route is minimized with an adequate distance or buffer maintained from the wildlife. There is a net increase of 14 miles of habitat exposure to newly proposed flight corridors and landing sites over the authorized flight paths and corridors of the 1995 decision.

The species most likely to be impacted by the Proposed Action would be mountain goats during dispersal to high quality birthing and foraging areas

in early spring. Often impacts are not readily apparent in adult animals but may result in higher rates of abortion or a decrease in yearling survival. Mountain goats are subject to high natural mortality and populations are sensitive to low recruitment rates. Mountain goats can be pushed below the threshold needed to maintain local populations with additional impacts that cause increased mortality and lower recruitment.

The importance of providing predator access to goat carcasses from accidental falls and avalanches as well as winter starvation is a critical element in early spring food sources for wolverines and bears. Access to goats by predators is also important as distribution and reduction in goat populations directly impact the maintenance of predator populations. During the early winter months, wolves prey on the mountain goats. Golden and bald eagles rely on mountain goat carrion, young lambs, and at times adults for a food source. The late winter, early spring nesting chronology of these birds is dependent in part on available carrion and high protein intake for successful breeding and hatching success. Reduction of localized goat abundance or carrion may directly impact population stability and reproductive success of these birds. The Chilkat Bald Eagle Preserve is adjacent to the area and has a high density of nesting bald eagles.

Wildlife response will vary depending on distance to escape cover, terrain and duration of exposure. Mountain goats on kidding habitat (May 1 to June 15) and on isolated habitats, such as land islands surrounded by snow and ice fields, may be most stressed by helicopter activities. In late June, it has been observed that the larger nanny-kid groups utilizing the high forage producing sites further from steep rocky cover react to fixed wing aircraft during monitoring flights. Individual goats or adults without kids appear to occupy rougher habitats and exhibit lower rate of reaction to monitoring aircraft. Research indicates that helicopter operations one mile or more from mountain goats will cause little visible reaction, such as a flight (running) response. Little is currently known of the specific short or long term population stability, seasonal habitat fidelity, and physiological or behavioral impacts on mountain goats and wildlife species from aircraft.

Most species of wildlife become accustomed to aircraft stimuli (including helicopters) if the perceived threat is minimized by distance, short duration of exposure, repeated patterns of flight, with avoidance of critical life cycle periods and habitats. Tolerance limits to short and long term

exposure of wildlife species (wolf, brown bear, black bear, mountain goat, wolverine) in the proposed area of disturbance are not well known. Mountain goats may be more sensitive to helicopter associated visual and auditory disturbance than other wildlife. Wildlife monitoring by BLM since 1995, indicates that there has been a decline in the overall productivity and number of goats kidding in the Norse Glacier area as compared to nearby control areas.

Goats access islands of habitat by crossing extensive ice fields and may occupy some year long. They would be most affected by nearby aircraft take-off procedures due to the sustained engine noise. The goats response would likely vary depending on distance of the rock island habitat from take-off and landing sites and how far goats are from such steep cover sites when stimulated. Size of group and makeup of groups is important in goat reaction. Nanny and kid groups appear much more reactive or sensitive to aircraft and also tend to venture further from cover to obtain sufficient quality feed. Repeated high numbers of take-offs near the rock islands could result in temporary or permanent displacement of animals.

Female brown bears with new cubs are also vulnerable to helicopter operation caused distribution and habitat selection that increases cub mortality. Wolverine den site disruption is an additional concern.

Noise impacts at landing areas are expected to be minimized if aircraft landing areas are located away from critical habitats, rock islands and outside the Monitoring Control Area. There is additional analysis of the noise impacts to wildlife within EA-AK-040-95-015 (Appendix 4).

2. Recreation:

Noise impacts to people participating in a variety of recreation activities in the use areas may increase as a result of the Proposed Action. These areas are also accessed by back country enthusiasts for recreation via chartered helicopters, fixed-wing aircraft or extended treks. The number of people in the area disturbed by helicopters or other aircraft is anticipated to be low, since most people access these areas by helicopter or other aircraft and are not sensitive to an occasional aircraft flying by or landing.

Quiet and solitude sought by recreationists involved in hunting, hiking, camping or other high alpine activities could be interrupted by the noise from helicopter overflights. Approved flight routes have been designed to

avoid those areas specifically identified by the public as locations where noise from helicopters would negatively affect recreationists.

Aircraft from the communities of Haines and Skagway flying over these areas is common. En route flights would pose the least amount of noise and visual impacts. More direct impacts may result from the take-off and landing activity. Hovering, engine start-up and shut-down results in increased duration of noise. However, impacts are expected to be low because of the short time required for passenger loading and unloading. Some recreationists may also sense some visual disturbance from the presence of helicopters in alpine areas.

There is additional discussion on the noise impacts to recreationists within EA-AK-040-95-015. Appendix 5 discusses the potential impacts to recreationists based on the proposed action and alternatives in 1995.

3. Noise Impacts to Residential Areas

In 2001, Temsco Helicopters relocated their base of operations in downtown Skagway to an extended large ship pier located near the airport, yet out over the water. The new location reduces most of the noise and visual impacts identified by Skagway residents and visitors. Temsco has also discussed flight paths with the residents of Dyea to design and implement the most suitable flight route.

There is additional analysis of the noise impacts to residents of Haines, Skagway and Dyea within EA-AK-040-95-015 (Appendix 5).

4. Socio-Economic Impacts:

The Proposed Action would allow continuation of Temsco Helicopters operations and thus maintain their economic role in the community of Skagway. The Proposed Action of Alaska Mountain Guides would increase their economic role in the community tax base for Skagway and Haines.

Long term decline in wildlife resources could be a direct impact to recreational wildlife watchers and sport hunters as well as impact established guiding and outfitting operations. The hunting and wildlife viewing public, including commercial operators and individuals, are concerned over impacts on bear and mountain goat populations where helicopter-related recreation is occurring. The prospect of being displaced or being forced out of established long term businesses as a result of new

helicopter assisted operations that create diminished wildlife populations is a concern.

B. Impacts of the No Action Alternative:

The No Action Alternative may reduce the potential positive socio-economic impacts in the form of a lower community tax base for Skagway and Haines. Temsco Helicopters has operated out of Skagway since 1984 and operated commercially on BLM lands since 1995. It is expected that the No Action Alternative would pose a serious impact to the economic well being of the company and the tax base of the upper Lynn Canal communities. The No Action alternative would likely maintain the current economic diversity and tax base contributions by existing guides, outfitters and ecotourism.

The No Action Alternative would reduce the risk of negative impacts to goat populations and to other wildlife species. Goats and other wildlife would continue to be impacted by current uses. If no landings are allowed on BLM administered land, that use will likely shift to State of Alaska lands as there are limited recreation permitting restrictions. Use could shift to USFS lands if additional landings were available. Because State and USFS lands are adjacent to BLM administered land and flight routes would be similar, overall impacts to wildlife may not change as much as it would initially seem.

Similarly, noise and visual impacts to recreation users and Skagway residents would decrease with fewer flights, assuming these flights were not rerouted to other lands. Noise would decrease and the opportunities for solitude would remain high. There is also a potential loss of recreation opportunities for people desiring access to areas they find otherwise inaccessible by conventional means.

C. Cumulative Impacts:

The implementation of the Proposed Action poses an increase of up to 500 additional helicopter glacier landings in the Harding Glacier area. There is a net gain of 14 miles of additional flight routes. Since 1999, the number of landings in the proposed operation area by Temsco has been capped at 4,700.

The USFS also permits 2,990 helicopter landings for dog sledding activities and glacier landing tours during the same operation season. USFS landing sites are east of Taiya Inlet while BLM landing locations are west of the inlet.

The cumulative period of exposure to helicopter supported recreation in areas where May 1 through September 30 operations are proposed is five months. In addition, BLM authorizes commercial heliskiing and filming permits on BLM

administered lands west of Haines. Use season for heliskiing and the associated filming permits is from March 1 through April 30. This operation area is approximately 15 miles from the nearest flight route proposed by Temsco Helicopters and is buffered by the Monitoring Control Area. This use could pose additional cumulative impacts to recreationists seeking solitude.

The current policy of Alaska Department of Natural Resources is to allow helicopter supported commercial recreation use with few restrictions. The impact of this use is similar to that described on public land, possibly greater, as no mitigation measures are required on state land. Restrictions of use on federal land may not decrease the total use but could potentially shift use from federal to state land and impact wildlife utilizing critical habitats on lands managed by both State and Federal managers.

Private aircraft use, including helicopters are also impacting the wildlife in the area. Some mining activity has utilized helicopters and likely impacted wildlife as described above for the duration of the exploration. The levels of this use is unmonitored, not subject to permit authorization, and is cumulative in regard to potential impacts.

D. Mitigation Measures:

All flights should operate within designated flight corridors and elevation restrictions. A 1,500 foot minimum elevation is required above river bottoms for bald eagle courtship and nesting territory and a one mile minimum distance where terrain allows for helicopter flight corridors that pass over mountain goat habitats.

If goats are observed on rock islands, landing areas should be located a minimum of one mile from the observed goat activity. Flight paths should be altered to avoid flying over habitats with observed goat activity.

The attached map depicts flight routes and landing site information important for the protection of goats in their late spring and summer habitats. Flight routes have been recommended to provide minimal impacts to all wildlife and potential recreation users.

The operation period for Temsco is from May 1 through September 30. A seasonal non-helicopter use period from May 1 through June 15 should be applied to the Norse Glacier. This restriction would help mitigate potential impacts to wildlife and use patterns for goats dispersing to and occupying kidding and high quality forage sites. This is also to the benefit of natal dens and neonatal habitat selection and use by bears and wolverine.

The operation period for AMG is from May 1 through September 30. A seasonal non-use period from May 1 through June 15 would be applied to the Ferebee watershed west of the Harding Glacier and Harding Peak. This restriction would help mitigate potential impacts to wildlife and use patterns for goats dispersing to and occupying kidding and high quality forage sites.

The AMG permit for Harding Glacier should be restricted to 200 landings in 2002 to determine capability of the operation and the areas to support activity. In the event the use area can support such activity, additional landings may be granted as follows:

Year	Number of Landings
2003	300
2004	400
2005	500

In the event that over two consecutive years local kid to adult ratios are lower than ten or that adults experience a two consecutive year drop of 20% or more, initiation of adaptive management actions may be initiated. Adaptive actions may include but are not restricted to seasonal restrictions of activity in localized landing or flight path areas, rotating use to landings or flight paths to other alternate areas already authorized, area closures, or opening new adjacent areas not to include the Monitoring Control Area.

V. CONSULTATION AND COORDINATION

A. Persons and Agencies Consulted:

State of Alaska, Department of Natural Resources
- Land Status
- Planning Efforts

U.S. Forest Service, Juneau Ranger District,
- Wildlife Consultation
- Past and current NEPA documentation concerning glacier landing tours

Alaska Department of Fish and Game
- Wildlife Consultation

City of Skagway
- Socio-Economics
- Tourism

Lynn Canal Conservation, Inc.
- Environmental Issues
- Wildlife
- Recreation Issues

Haines Service Area Board
Environmental Issues
Regulation/Mitigation
Haines Fish and Game Advisory Committee
Temsco Helicopters Inc., Skagway, Alaska
Alaska Mountain Guides and Climbing School, Haines, Alaska
Various guides and outfitters in the Haines area.

B. List of Preparers:

Jake Schlapfer, Outdoor Recreation Planner
Melissa Blair, Outdoor Recreation Planner
Donna Redding, Cultural Resources
Jeff Denton, Subsistence/Wildlife
Dave Kelley, Natural Resource Specialist
Callie Webber, Realty Specialist

Appendix 1

H. Other Laws and Permits

Neither the Forest Service nor the Bureau of Land Management have jurisdiction to regulate aircraft flight paths, altitudes, or noise caused by helicopter overflights. However, permit holders are required to abide by all federal, state, county (borough), or municipal laws, ordinances, or regulations which are applicable to the area or the operations covered by the permit. Failure to do so could result in either suspension or revocation of the permit.

H. 1. Federal Aviation Administration

The airports in Haines and Skagway are untoward facilities and are under the jurisdiction of the Federal Aviation Administration (FAA). The FAA is the agency responsible for all aircraft travel in uncontrolled airspace. The Flight Standards Division of the FAA is responsible for all flight operations (including safety) in controlled and uncontrolled airspace.

The Code of Federal Regulations for the Federal Aviation Administration and Department of Transportation Volume 14, Chapter 1, Part 135.203 states:

> "Except when necessary for takeoff and landing, no person may operate under visual fight rules (VFR) a helicopter over a congested area at an altitude less than 300 feet above the surface."

Only commercial helicopters have this 300-foot above-the-ground-level restriction. If a helicopter is not carrying passengers for compensation or hire, then they fall under the rules of Federal Aviation Regulation (FAR) 91.119 which states that helicopters may be operated at less than the minimums if the operation is conducted without hazard to persons or property on the surface.

In addition to the 300-foot rule, the N ANA has also issued an Advisory Circular AC91.36C, dated March 19, 1982, that recommends flying 2,000 feet over noise sensitive areas.

The Alaska Department of Transportation owns, operates, and maintains the airstrips at both Skagway and Haines. They are not responsible for aircraft travel in uncontrolled airspace.

H. 2. City of Haines

The City of Haines currently does not have an ordinance in place that would specifically address the issue of noise caused by either helicopter or fixed-wing aircraft overflights. The city's nuisance ordinance, Chapter 8.12 NUISANCES, Sections 8.12.010 and 8.12.020 part E; and,

Chapter 9.24, Section 9.24.050, part 3, (Healy, 1995) are provided as reference on this subject:

> "8.12.010 Definitions. For the purpose of this chapter, "nuisance" means any act or creation which is injurious to the public health, or which prevents or abstracts the free and comfortable enjoyment of life and property or which is dangerous to surrounding property. (Ord. 409 '5 (part), 1987)
>
> 8.12.020 Certain conditions declared nuisances. It shall be unlawful for any person to cause or create the following nuisances:
>
> E. To make any loud or unusual noise that annoys, injures or endangers the comfort, repose or health of a person, except as may be necessary in the operation of properly maintained pile drivers, power shovels, pneumatic hammers or other apparatus which could not be operated otherwise;
>
> and,
>
> 9.24.050 Disturbing the peace. A. It is unlawful for a person to:
> 3. Between the hours of eleven p.m. and seven a.m. operate or use a pile driver, pneumatic hammer, bulldozer, road grader, loader, power shovel, derrick, backhoe, power saw, manual hammer, motorcycle, snow machine, or other machinery, instrument, appliance or vehicle which generates an unreasonably loud noise, after having been informed by another that such operation or use is disturbing or is likely to disturb the peace or privacy of others."

These ordinances have never been applied to aircraft in the Haines area.

H. 3. Borough of Haines

The Borough of Haines does not have a general noise ordinance which encompasses the entire borough. The Mud Bay and Lutak areas within the borough have planning and zoning regulations in place. These areas, referred to as Service Areas, have a noise ordinance dealing with heavy equipment operations and generators. The Service Area Boards would have to petition the Borough Assembly to enact ordinances which specifically addressed noise impacts from aircraft overflights (Palmer, 1995).

H. 4. City of Skagway

The City of Skagway has a general nuisance ordinance which is similar to that of the one listed for the City of Haines. They do not have any ordinances which specifically address noise issues relating to the operation of aircraft. The City Assembly would be the governing body

responsible for enacting any ordinances which would regulate noise from aircraft take-offs, landings, and overflights (Filip, 1995).

H. 5. U.S. Fish & Wildlife Service

The U.S. Fish & Wildlife Service administers the Endangered Species Act, as re-authorized in 1982, and the Bald Eagle Protection Act of 1940, as amended. The Forest Service and BLM must consult with the U.S. Fish and Wildlife Service regarding any threatened or endangered species that might be impacted by the proposed action or any of the alternatives.

H. 6. Alaska Department of Fish & Game

The Alaska Department of Fish & Game (ADF&G) provides federal agencies with comments and recommendations on projects under the Fish and Wildlife Coordination Act (16 USC 661 *et. seq.*).

H. 7. Alaska Administrative Code

Section 5 AAC 92.080, in pertinent part states:

"Unlawful Methods of Taking Game; Exceptions. The following methods of taking game are prohibited: . . . (5) with the use of aircraft, snowmachine, motor driven boat, or other motorized vehicle for the purpose of driving, herding, or molesting; . . . ."

This code section would be applicable to helicopter tours when they make close passes to wildlife for the purpose of viewing them.

Appendix 2

Stipulations Adopted for Helicopter Use from EA-AK-040-95-015

For all mitigation measures, it is recognized that exceptions may be made for all aircraft safety. Aircraft and passenger safety will take precedent over these mitigation measures.

1. All authorized operations will assure that operators meet FAA requirements to achieve safe air operations (routing, airspace separation and coordination with other operators).

2. All authorized operators will be required to submit and abide by a Safety and Operating Plan which will be approved by the BLM and will be a part of the Special Recreation Use Permit. The FAA may review these submissions.

3. All operations will maintain a 1,500 foot clearance of key mountain goat areas, mountain goats, sensitive bird nesting sites, brown and black bears, wolves, moose, sea lions, and other marine mammals. Steepness (degree in slope) and roughness (outcrops and spur ridges) affect the ratio of elevation to horizontal distance significantly. Attempts should be made to maximize distance between ground and habitats or animals wherever possible. Flight routes over near level terrain will maintain a minimum of 1,500 feet above ground level and at least 1,500 feet horizontal distance from wildlife habitat features described above. Pilots are not expected to compromise safety when weather conditions indicate the 1,500 foot minimum cannot be met.

4. Helicopter landing areas will maintain a minimum of one mile distance from observed mountain goat activity on rock islands. Flight paths should be altered to avoid flying over rock islands with observed goat activity.

5. All authorized operations will adhere to U.S. Fish and Wildlife Service (USF&WS) recommendations regarding eagle nests. Operators will be furnished with maps which show locations to be avoided during the nesting season.
   a. Maintain established travel routes, but avoid any eagle nest by at least 3 mile (1,320 feet).
   b. Helicopters must avoid hovering near and circling any eagle nest.
   c. Report to USF&WS office and the BLM eagle nests found that are not indicated on maps provided.

6. Do not hover, circle, or harass wildlife in any way. This refers particularly to mountain goats, wolves, bears, eagles, sea lions, and other marine mammals, but includes all wildlife species.

7. All operations will be requested to report observations, numbers, classification, and behavior by date, time, observer (pilot), location (map) of mountain goats, brown and black bear, moose, wolf, black tail deer, and wolverines, to the BLM within 30 days after activities are complete. It is understood that can only be done secondary to safety during the flight and the purpose of the tour. BLM will provide training and data sheets if requested.

8. BLM will continue a monitoring plan with the Alaska Department of Fish and Game (ADF&G) to monitor wildlife, particularly mountain goats for habitat use area fidelity, population productivity, stability of numbers and habitat occupancy, distribution in and adjacent to the affected areas. Appropriate changes in operations will be coordinated with operators and may include a wide range of options, i.e., rotational use of landing sites as necessary to achieve occupation of available habitat goals.

9. BLM will monitor and track complaints by user groups, follow up for validity, frequency, and determination of significance; where warranted, make appropriate adjustments in flight route criteria or landing site management in consultation with user groups and operators.

Appendix 3

E. 4. Glacier Landing Sites Discussion -- BLM Lands

E. 4. a. West Creek Glacier

Earlier discussions on bear, wolf, wolverine, bald eagles, various raptors, river otter, seal and sea lions (Lynn Canal), and a variety of songbird, nongame and game birds and mammals, and sea birds apply to all landing sites.

This landing site is on the foot of an unnamed glacier called West Creek Glacier for the purposes of this analysis. The setting is a glacial valley approximately 0.5 miles wide near the bottom of the steep side slopes (See Maps 3-A through 3-Q). The site is less than 100 yards from the end of the glacier and pioneering vegetation associated with receding alpine glaciers. Site specific observation data regarding mammals or relative to mountain goat kidding, seasonal, or breeding habitat use and distribution is lacking. Goat habitat capability criteria application indicates mountain goat cliff habitats within 0.6 miles of the landing site and potential summer foraging sites within 0.25 miles. This habitat would be typical summer habitat with the presence of year-long habitats characterized by timber and cover associated cliffs being within 1 mile east of the site. Black bear, brown bear and mountain goats use the pioneer vegetation at the foot of the receding glaciers as foraging areas. Brown bear denning is not specifically identified in the Norse Glacier valley or side slopes; however the habitat selected for den sites is abundant in the area.

Flight routes to and from the landing sites from the north and west traverse primarily ice fields and high elevation bare rock terrain. The proposed approach flight path from the southeast up West Creek valley flies over portions of mountain goat, bear and moose habitat as well as the wildlife communities typical of the forested and alpine tundra types in this region.

E. 4. b. Ferebee Glacier

The proposed landing site is near the foot of the Ferebee Glacier in a valley bottom approximately 1.0 miles wide (See Maps 3-A through 3-Q). The lower limits of predicted mountain goat habitat and timber/cliff cover occur within 0.5 miles of the landing site. These habitats are isolated in terms of timber cover and exhibit abundant cliffs both in the timber and in alpine tundra areas within a mile of the landing site. The upper limits of mountain goat habitat in the Ferebee River drainage would best describe the area surrounding the landing site. Flight approaches from the north traverse the ice field until within 2 miles of the landing site when mountain goat habitat on the east exposure of the valley would be flown over for a distance of 1.5 miles. Flight routes proceeding to the east cross over portions of mountain goat summer habitat on the south and west facing basins on the Ferebee side of Halutu Ridge and over slopes occupied by mountain goats in the Burro Criid drainage.

E. 4. c. Norse Glacier

The landing site lies at the very end of the receding Norse Glacier. The site is at the junction of a small drainage flowing from a steep timbered canyon to the north and another drainage from the northeast while the Norse Glacier flows in a west southwesterly direction and becomes the Norse River valley as the valley continues to the southeast. The landing site is within 0.2 miles of mountain goat timber/cliff cover on south facing slopes with a flight line following routes immediately paralleling the same south facing cliff terrain to the west and southeast along both sides of the Norse River Valley. The landing site is within 100 yards of foraging sites for mountain goats and bears. The flight line proposed due north of the landing site also is within 0.2 miles of mountain goat timber/cliff cover habitats. Mountain goat habitat is very limited in the area, with south exposure cliff/timber, and cliff/alpine tundra spring green-up, parturition, and habitats of yearlong significance to goats all occurring either within a 1 mile radius of the landing site or immediately below or adjacent to approach or take-off aircraft flight paths (See Maps 3-A through 3-Q).

All typical large mammal species occurring in these types of habitats have been observed. Harvest or harvest effort in this area has expanded in this area over the last decade. Refer to the discussion for other large mammals and other species in the West Creek Glacier text.

E. 4. d. Grand Canyon Glacier

This landing site is well out of mountain goat habitat capability. Approaches or exit routes from the landing site are primarily over high rock outcrop and ice fields with no habitat capability. Only the portion of flight routes accessing the landing site that occur in the Norse River and Taiya River Valley occur over or adjacent to large mammal habitats and habitats of typical wildlife species groupings typical of the region (moose, black and brown bear, mountain goat, wolf, wolverine, coyote, raptors, various furbearers and non game birds and mammals). All large mammal species have been observed and harvested on the habitats noted in the river valleys and associated mountain slopes. See discussion of large mammal and other species in the West Creek Glacier text (See Maps 3-A through 3-Q).

E. 4. e. Chilkat Glacier

This landing site is within 200 feet of the south slopes of a 4.2 square mile island of potential mountain goat habitat surrounded completely by large extensive ice fields (See Maps 3-A through 3-Q). No specific wildlife data is available for the site or immediate area or the flight routes accessing this landing site.

Appendix 4

E. Issue 3 - Noise Impacts to Wildlife

E. 1. General Discussion

The primary wildlife issue in this analysis is impacts to mountain goats. Other wildlife species are discussed first. Mountain goats are discussed in more detail after other species are addressed.

Black bear, brown bear and mountain goats use the pioneer vegetation at the foot of receding glaciers as foraging areas. Brown bear denning is not specifically identified in any area; however the habitat selected for den sites is abundant in the area of analysis. Late emerging bear (May and June), especially sows with cubs of the year, use the area around the den site for a period after emergence and seek security from male bears in the extreme high elevation rock pinnacle area. Wolves and wolverine are the predominant large predators in the region and mountain goats are a major prey species and carrion food source. Wolves den, raise young, have rendezvous sites, and occupy pack territories in the area. Local extinction, lowered populations, isolation of localized populations and gene pools and changes in productivity of mountain goats indirectly effect the functioning of a much larger ecosystem.

Bald eagles, various raptors, river otter, seals and sea lions (Lynn Canal), and a large variety of songbirds (neotropical, resident, neotemperate), nongame and game bird and mammals, and sea birds all occur and to varying degrees breed and raise young in the area. Specific information is insufficient to quantify these resources and relationships.

Mountain goat populations in Southeast Alaska are dispersed and low density. Subpopulations occupy relatively small patches of habitat. The small size and patchy distribution of groups creates a higher potential for in-breeding or periodic local extinctions (Smith & Raedeke, 1982). These dynamics of goat populations must be considered in assessing additional stresses to populations that may occur as a result of helicopter activity.

Mountain goat home ranges are relatively small. Studies of 28 radio-collared mountain goats in Southeastern Alaska show that year round home ranges are usually from 10 to 20 square kilometers (Fox, et al., 1989). Seasonal range attachment to sites is high. Preferred sites are used year after year. Attachment to sites used in summer is higher than winter (Fox, et al., 1989). Mountain goats prefer steep, rugged terrain (Brandborg, 1955; Rideout and Hoffman, 1975) and this preference is generally explained as predator avoidance (Fox and Streveler, 1986; Rideout and Hoffman, 1975).

Mountain goats spend 60 percent of daylight hours within or at the edge of escape terrain in summer (Fox,1983; Schoern and Kirchoff, 1982; Smith, 1985). Mountain goats near Juneau use rock outcrops, alpine tundra, subalpine forest and shrub habitat types predominantly during

summer (Schoen and Kirchoff, 1982). Assuming nighttime bedding in escape terrain, the longer period of daylight in summer means that mountain goats spend substantially more time outside escape terrain than in winter (Fox, et al., 1989). Smith (1985) reported that 95 percent of all relocations of radio-collared mountain goats in Southeast Alaska were within 1,300 feet of cliffs which could be used as escape terrain.

Biologists have not reached consensus regarding the effect of human disturbance on mountain goat distribution over long periods of time (Smith, 1986). Research has indicated that human activity can displace mountain goats from portions of otherwise undisturbed habitat. Chadwick (1973) found that in western Montana mountain goats abandon habitat temporarily as a result of road building activities. In Glacier National Park, Singer (1975) demonstrated some habituation to noise and human disturbance, however loud construction activities caused mountain goats to restrict their use of previously used area.

Foster and Rahs (1983) analyzed mountain goat response to hydroelectric exploration activities and found that a buffer zone of a two kilometer radius was required to prevent an overt response to human activity. A major concern for mountain goat management is increased human presence resulting in mountain goat disturbance, increased legal harvest and illegal harvest (Phelps, 1983; Quaedvlieg, et al., 1973).

The behavior of wildlife has been used to assess the influence of human activities (Hicks and Elder, 1979; Berger, et al., 1983; King and Workman, 1986). Because ungulates (hoofed mammals) devote a high percentage of time to feeding and foraging behavior, time budgets (documentation of the percentage of time spent in a variety of activities) are important parameters to evaluate disturbance. Long-term disturbances may lead to acute or chronic reduction in foraging efficiency (Berger, et al., 1983; King and Workman, 1986).

The percentage of time spent feeding does not seem to be different inside or outside of escape terrain (Fox, 1983); however, the forage intake rate is probably much greater in the dense vegetation outside escape terrain. The percentage of time mountain goats spend feeding or searching for food increases with distance from escape terrain (McFetridge, 1977) probably because feeding is the only incentive for being away from the escape terrain. The relative amount of feeding time may decrease slightly with distance because of an increase of time devoted to keeping alert to the presence of predators (Risenhoover, 1981).

Stockwell et al. (1991) conducted time budget studies of bighorn sheep at Grand Canyon National Park where helicopter traffic ranges from 15,000 to 42,000 flights per year. This study and others (Altman, 1958; Berger, et al., 1983; Drausman and Hervert, 1983; Knight and Knight, 1984; Miller and Smith, 1985; and Krausmann, et al., 1986) indicated that the degree of disturbance was a function of the proximity of the aircraft. Heart rates of Rocky Mountain bighorn sheep (Ovis canadensis canadensis) did not change in respond to high flying aircraft

(over 400 meters) but sheep did respond to low flying aircraft (90 to 250 meters) by running, which increased heart rates by three to five times (MacArthur, et al., 1979, 1982). Helicopters at low altitude caused a notable reduction in foraging efficiency in the Grand Canyon study (Stockwell, et al., 1991).

Another study (Bleich, et al., 1994) warned scientists to be concerned about the effects of helicopter activity on the condition and reproductive success of large mammals. Nutritionally stressed individuals may be especially susceptible to disturbance from helicopter activity which causes them to depart from prime habitats for extended periods. Data presented by Krausmann and Hervert (1983) also support this. The effects of such disturbance would be exacerbated for mountain goats living in environments where critical resources are limited and widely distributed (Bleich, et al., 1994). Mountain goat movements resulting from disturbance also have the potential to make them vulnerable to predation.

Management recommendations resulting from the Stockwell, et al. (1991) study include minimizing impacts by restricting the number of flights and by regulating the flight altitudes of helicopters. Flight altitudes of at least 400 to 500 meters were recommended to minimize impacts. Fox, et al. (1989) recommended that helicopter activity near cliff areas used by female goats for kidding and early neo-natal periods be avoided. These studies provide the basis for the proposed mitigation of all the action alternatives.

Appendix 5

B. 2. Helicopter Noise (Annoyance)

Helicopter take-offs, landings, and overflights are an issue to recreationists and residents because of their concerns that noise from these operations will interrupt their quiet and solitude. The issue of noise impacts caused by helicopter overflights is not unique to this project or analysis.

In June of 1993, engineers from the U.S.D.A. Forest Service's Technology & Development Center, San Dimas, California, conducted a sound measurement study which focused on the impact of helicopter sound on local residents in Juneau, Alaska. In the study, measurements of helicopter sounds and ambient background sounds were obtained at a variety of locations throughout Juneau to aid in the assessment of the sound impact of helicopter tours. The conclusion of this study was that the sound levels from helicopters were not high enough, nor of long enough duration, to pose a threat to hearing safety for either humans or animals. Although the conclusion of the study was that noise from helicopters was not considered to be a safety threat to humans, it was noted that some people who reside in areas which are close to helicopter flight paths were highly annoyed.

Noise is a sound that has characteristics that may irritate or annoy a listener, interfere with the listener's activity, or in some other way be distinguished as unwanted (U.S.D.A., 1980). Annoyance and noise are used interchangeably in this discussion. Noise (annoyance) may also be defined as the magnitude of the sound that has reached unacceptable levels, durations, or qualities (U.S.D.A., 1980). Annoyance (noise) that a person experiences from an intrusion of sound is largely based on the connotation of the sound, and not its level. The loudness and pitch of a noise are subjective impressions that depend on the amplitude and frequency of sound, as well as the characteristics of the listener (U.S.D.A., 1980). Amplitude determines loudness and is measured in decibels (dB). Frequency is measured in Hertz (Hz, cycles/second) and it determines pitch. Because of the subjective nature associated with the interpretation of sounds and the settings where those sounds occur, the degree of annoyance may depend upon a person's expectation relative to the sound and/or its setting (U.S.D.A., 1980).

Helicopter noise would be less apparent in areas where the background (ambient) noise levels are higher from other sound sources such as fixed wing planes, jets, road traffic, trains, and other human-made sounds. Those areas with high background sound levels will tend to mask the helicopter sounds, and thereby will tend to be less impacted and fewer people would be highly annoyed (U.S.D.A., 1994). Comparisons of the intensity of helicopter noise relative to common noise levels show that a helicopter landing or taking off is rated similar to that of a busy urban street or a heavy diesel truck (this is referenced to a human standing 500 feet from the source of the helicopter noise). Noise levels vary for different helicopters. The above comparison was made for a Bell 206L (Long Ranger) helicopter (EPA, 1985).

As a general reference, noise levels from several different sources are presented for comparison purposes. In 1989, there was a sound survey taken in the Skagway area to determine the levels of sounds from activities within and around the. city. Results of this survey show that the loudness of the White Pass & Yukon Train whistle (105 dB) and that of the Fairweather cruise ship when docking (100 dB) were higher than that of the Hughes 500 helicopter when taking off and landing (95 dB). Other sound measurements taken included a Hughes 500 directly overhead (about 1,000 feet altitude) at the Dyea ranger station (20 dB), and a Hughes 500 heading towards West Creek registered 60 dB at the Dyea ranger station (Bon, 1989).

Temsco Helicopters, Inc. currently use A-Star helicopters when conducting helicopter glacier tours. In a noise study conducted by Temsco in 1985, the A-Star helicopter had a peak noise level 5 dB lower than the Hughes 500. This study also showed that the pitch of the noise generated by the A-Star to be far less irritating to the human ear than the higher-pitched sound of the Hughes 500 (U.S.D.A., 1992). L.A.B. Flying Service, Inc. currently uses an Enstrom gasoline-powered piston engine helicopter. Noise levels for the Enstrom helicopter were not part of this survey. L.A.B. has indicated that they are plan to upgrade their helicopter fleet to include larger capacity models-this could possibly be the A-Star helicopter. Packer Expeditions would most likely be contracting with Temsco Helicopters, Inc. to transport any clients to or from the Glacier Station landing site.

In this analysis, the noise impacts from the helicopter flights are secondary effects to the actual helicopter landings. The Forest Service and the BLM do not have jurisdiction over airspace (including flight paths) or the regulatory authority to control noise impacts caused by helicopter flights associated with helicopter glacier tours or helicopter flight seeing tours. The elimination of the glacier landings would probably not reduce the number of flights (take-offs, landings, and over-flights) from the airport in Haines or the heli-port located in Skagway. The helicopter companies are requesting permits to conduct helicopter glacier tours because they anticipate the demand for these tours would be steadily increasing in the near future. It is estimated that the number of cruise ship tourists visiting Southeast Alaska will increase 40 percent from 1994 to 1995, and in subsequent years there will be an annual increase of approximately 10 percent (Mattison, 1995). With this level of increase in tourist numbers, the demand for the opportunity to experience the Alaskan wilderness, albeit from the comfort of a helicopter, will undoubtedly increase. Based on the past success of these tours in Juneau and Skagway it is apparent that these tours are very marketable.

For the sake of simplicity, we will define a helicopter "flight" to mean one helicopter taking off from its base of operations (the Haines airport or the heli-base in Skagway) and then returning to the point of origin. All helicopter glacier tours include a landing on a glacier. For the helicopter flight seeing tour, the glacier landing would be eliminated and fight seeing would be the focus of the trip.

C. Issue 1 B Noise Impacts to Residential Areas

This issue deals with the noise impacts to the residents of Haines, Skagway, and Dyea. Because of the proximity of the downtown area of Skagway to Temsco's heli-base the noise impacts to this area will be considered within the context of the analysis dealing with noise impacts to residential areas.

D. Issue 2 B Noise Impacts to Recreationists

This issue relates to the noise impacts to people participating in a variety of recreational activities. They would be impacted through the interruption of their solitude and quiet by the noise from helicopter overflights while they were involved in hunting, fishing, hiking, camping, boating, picnicking, and viewing scenery.

The following areas were identified from scoping comments as locations where the impact of noise from helicopters would affect recreationists: the Katzehin River, the Chilkoot Trail. and the trail head area near Dyea, the Denver Glacier Trial, and the Laughton Glacier Trail.

Based on input from the scoping effort (letter dated October 31, 1994) which outlined Temsco's original proposal to conduct glacier landing tours and heli-hiking tours, Temsco withdrew the Laughton Glacier landing site from consideration for this analysis. Temsco has also indicated that they would not use the north to south flight path that accesses the unnamed glacier (next to Laughton Glacier) from the Glacier Station landing site. Therefore, noise impacts to recreationists using Laughton Glacier Trail or Denver Glacier Trail are not an issue under any of the action alternatives.

The proposed Tongass Land Management Plan Revision has listed the Katzehin River as eligible for further evaluation to determine the suitability of recommending it for Congressional designation and classification as a wild river. However, there has not been a Record of Decision on the listing of the Katzehin River as eligible for evaluation to determine suitability.